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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,810	08/09/2006	Jurgen Deininger	13156-00069-US	2775
23416 7590 01/14/2008 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			EXAMINER LISTVOYB, GREGORY	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/14/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/588,810

Applicant(s)

DEININGER ET AL.

Examiner

Gregory Listvoyb

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/09/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Mohrschladt (US 6359020) herein Mohrschladt or Bassler et al (WO 0208313, cited with equivalent US 6815527) herein Bassler in combination with Marchildon et al (US 6201096) herein Marchildon.

Mohrschladt or Bassler disclose a process according to claim 11 that comprises the following stages:

(1) reacting aminonitriles or dinitriles and diamines or mixtures thereof, and optionally together with further polyamide-forming monomers and/or oligomer with the aqueous medium in the reactor at a temperature from 90 to 400°C and a pressure from 0.1 to 10 x 35x10<sup>6</sup> Pa to obtain a reaction mixture,

(2) further reacting the reaction mixture at a temperature from 150 to 400°C and a pressure which is lower than the stage 1 pressure, wherein the temperature and the pressure are chosen such that a first gas phase and a first

liquid phase are obtained and the first gas phase is separated from the first liquid phase,

(3) admixing the first liquid phase with a gaseous or liquid phase comprising water or an aqueous medium at a temperature from 90 to 350°C and a pressure from 0.1 to 30 x 10<sup>6</sup> Pa to obtain a product mixture.

(4) postcondensing the product mixture at a temperature from 200 to 350°C and a pressure which is lower than the stage 3 pressure, if stage 3 is carried out, wherein the temperature and the pressure are chosen such that a second gaseous phase, which comprises water and ammonia, and a second liquid phase, which comprises the polyamide, are obtained (see Mohrschladt, Column 2, line 25 and Bassler, Column 2, line 15).

Regarding Claim 17, Mohrschladt or Bassler disclose Titanium Oxide catalyst (see Bassler, Column 6, line 30, Mohrschladt, Column 5, line 45).

In reference to Claim 18, Mohrschladt or Bassler disclose a reactor having a vertically disposed longitudinal axis wherein, in the reactor, the reaction product is removed from the bottom and ammonia formed and any further low molecular weight compounds formed and water are taken off overhead, wherein the reactor (see Mohrschladt, Column 5, line 10).

Regarding Claim 20, Mohrschladt or Bassler disclose aqueous media with solids content of 20-90 and the solids are lactams and cyclic oligomeric lactams having two to six ring members that are derived from the aminonitrile used (see Mohrschladt, Column 2, line 20).

Mohrschladt or Bassler do not disclose water and/or the aqueous medium are introduced into the reactor at two or more different locations along the vertical longitudinal axis.

Marchildon discloses a continuous polymerization process for preparing polyamides from aminonitriles (see Abstract).

Marchildon teaches that water (or steam) introduces into the reactor from multiple (four) positions (see Figures 1, 3 and Column 6, line 1).

In Examiner's position, this design allows to avoid reactor overheating and eventually leads to a better contact with catalyst and better mixing of the reagents.

Therefore, it would have been obvious to a person of ordinary skills in the art to use multiple port reactor to introduce aqueous media in Mohrschladt or Bassler's processes in order to provide better contact with catalyst and even distribution of the reagents in the reactor.

Regarding Claim 18, Marchilden teaches the reactor comprises at least two chambers arranged above one another in the longitudinal direction, where the chambers are separated from one another by liquid-tight bottom plates,

every chamber is connected via a liquid overflow to the immediately underlying chamber and a liquid product stream is taken off via the liquid overflow of the bottommost chamber,

the gas space above the liquid surface in every chamber is connected to the chamber located immediately above it by one or more guide tubes which opens, or which each open, into a gas distributor having openings for the exit of gas below the liquid surface,

and is also provided with at least one guide plate which is arranged vertically around each gas distributor and whose upper end is below the liquid surface and whose lower end is above the liquid-tight bottom plate of the chamber and which divides each chamber into one or more spaces into which gas flows and one or more spaces into which gas does not flow (see Figure 1 and Column 5, line 50).

This design provides a high rate per unit of liquid volume, of mass transfer and chemical reaction (see Column 5, line 65).

Therefore, it would have been obvious to a person of ordinary skills in the art to use Marchilden's reactor design to in Mohrschladt or Bassler's processes

in order to provide high rate per unit of liquid volume, of mass transfer and chemical reaction.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb  
Examiner  
Art Unit 1796

GL  
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RABON SERGENT  
PRIMARY EXAMINER